Before The
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Advanced Television Systems	)	MM Docket No. 87-268
and Their Impact Upon the	)	
Existing Television Broadcast	)	
Service	)	

To: The Commission

PETITION FOR RECONSIDERATION

Mountain Lake Public Broadcasting, Inc. ("Mountain Lake"), licensee of noncommercial educational television station WCFE-TV, Channel *57, Plattsburgh, New York, by its counsel, hereby petitions for reconsideration of the *Sixth Report and Order* in MM Docket No. 87-268, FCC 97-115 (released April 21, 1997) ("*Sixth R&O*"), insofar as the *Sixth R&O* allocates Channel *38 as the paired digital TV channel for Mountain Lake's current Channel *57. As described herein, requiring Mountain Lake to use Channel *38 will cause substantial and unnecessary hardship.

In its separate consideration of possible DTV allocations, the Broadcasters Caucus proposed the much more attractive allocation of Channel *13 for WCFE-TV. Mountain Lake has engaged in preliminary engineering studies and has tentatively selected that substitute channel, Channel *13, that it proposes for use instead of Channel *57. Moreover, Mountain Lake continues to engage in engineering studies and anticipates that it and the Commission, working together, can determine whether Channel *13 (or another workable lower-band DTV channel within the core spectrum to substitute for Channel *38) can be used by WCFE-TV

without significant disruption to other allotments or diminution in coverage area. In this single respect, Mountain Lake seeks relief by this petition.

At the outset, Mountain Lake compliments the Commission on the substantial effort reflected in the DTV Table of Allotments and the *Fifth* and *Sixth Reports and Orders* in this proceeding. Mountain Lake appreciates that the FCC has recognized and tried to accommodate the unique needs of public television stations. Mountain Lake also understands that complicated considerations that will have to be undertaken by the Commission as it deals with this Petition and others filed by commercial and noncommercial educational television stations. Nevertheless, Mountain Lake believes that the alternative DTV channel, Channel *13 for Station WCFE-TV at Plattsburgh, as requested in this Petition, would best serve the public interest.

Mountain Lake has operated Station WCFE-TV since 1977, providing high quality educational, informational and cultural programming, including children's programming, to the north-easternmost region of New York State and portions of northern Vermont. The facilities and equipment for Station WCFE-TV were funded almost entirely (approximately 90%) with federal funding, reflecting the federal government's important interest in ensuring continued public television service to these regions. Station WCFE-TV serves a large, but rather sparsely populated rural area in northeastern New York and northwestern Vermont. Station WCFE-TV's coverage area extends some 8,901.5 square miles, yet the population base numbers only 257,000 persons.[1/] Thus, the financial operating costs of transmission equipment is of utmost important to the survival of this small, rural public television station.

[1/] These figures were obtained from a study by MSTV, dated October 9, 1996. See Engineering Statement. The study used Longley -Rice projections methodology.

For these reasons and others, by necessity, as a noncommercial educational licensee serving this type of area, Mountain Lake must be a careful steward of its resources, even while it seeks to continue quality DTV service to audiences of the public broadcasting system. The allocation of Channel *38 as its paired DTV channel instead of apparently available Channel *13, however, creates enormous obstacles to the achievement of its goals and jeopardizes future DTV service for public broadcasting audiences in the region served by WCFE-TV.

As mentioned above, the Broadcast Caucus had proposed Channel *13 for Station WCFE. Attached to the Engineering Statement of Charlie Zarbo are information provided by MSTV and the Broadcast Caucus for use of DTV Channel *13 at the WCFE-TV transmitting site. Mountain Lake believes that Channel *13 can still be paired with WCFE-TV's NTSC channel consistent with the principals of the *Sixth R&O*.

However, in the *Sixth R&O*, the Commission allocated Channel *38 for WCFE-TV. The Commission suggested that the Channel *38 facility could operate at 50 kW at 741 meters HAAT, providing 100% coverage of WCFE-TV's existing service area.[2/]

Mountain Lake requests reconsideration of that aspect of the *Sixth R&O*, and urges the Commission to work with WCFE-TV to substitute Channel *13 (or an equally acceptable substitute VHF channel) for Channel *38. Mountain Lake plans to commission a further

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[2/] In view of the Commission's and Broadcasters Caucus proposals, and in recognition of the fact that the Commission and the broadcasting industry urged that individual broadcasters not file separate comments, Mountain Lake saw no necessity to participate in the proceeding earlier on an individual basis. Mountain Lake did participate, however, in the form of comments filed on its and other public TV stations' behalf by the Public Broadcasting Service and America's Public Television Stations. Therefore, the requirements of Section 1.429 of the Rules with respect to petitions for reconsideration should be deemed satisfied. If necessary, however, Mountain Lake requests waiver of Section 1.429 to the extent necessary for the Commission to consider its petition, in view of the public interest issues raised herein.

engineering study, but believes that Channel *13 can be allotted to WCFE-TV consistent with the goals of the Commission's DTV allotment proceeding.[3/] Mountain Lake believes that Channel *13 is currently the best alternative channel that would avoid interference to other NTSC and DTV allotments and stations, although its confirmation of this fact has been hampered by the unavailability of appropriate engineering tools.

Substantial hardship will be inflicted upon Mountain Lake if it is required to activate its DTV channel on Channel *38 in lieu of Channel *13 (or another available VHF allotment). As noted in the attached Engineering Statement of Charles Zarbo, the differences in total expenditures between constructing a DTV facility on Channel *38 (approximately $2,159,000) versus Channel *13 (approximately $740,000) amounts to a difference of $1,419,000 or a difference of almost 291% in costs. Moreover, annual operating costs would be 85% more for a UHF Channel *38 facility. These cost differences are themselves a devastating problem for a noncommercial educational station serving rural audiences.

For the foregoing reasons, Mountain Lake requests reconsideration of the *Sixth R&O* to the extent that it allocates Channel *38 for WCFE-TV in Plattsburgh and suggests substitution of Channel *13 for WCFE-TV at Plattsburgh (or another suitable VHF channel, should Channel

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[3/] Mountain Lake is awaiting the FCC's anticipated release of OET Bulletin 69, which will provide detailed information on a variety of the engineering calculations underlying coverage and interference considerations. Mountain Lake reserves the right after the release of Bulletin 69, to supplement or modify its request as presented in this petition.

*13 be deemed unworkable). Mountain Lake respectfully submits that the public interest would be best served by this substitution in allotments.

Respectfully submitted,

MOUNTAIN LAKE PUBLIC BROADCASTING, INC

By: _____
Todd D. Gray
Margaret L. Miller
Candace W. Clay
Its Counsel

Dow, Lohnes & Albertson, PLLC
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June 13, 1997

Mountain Lake

Submitted by Charles Zarbo, Chief Engineer
June 11, 1997

ENGINEERING STATEMENT

For WCFE's particular situation, there will be a substantial difference in costs to construct a VHF, Channel 13, versus a UHF, Channel 38, RF plant. I will provide a cost comparison using the most current industry price estimates to demonstrate the vast differences. These issues are critical for a small PBS affiliate in northern New York.

I've used the construction cost estimates provided to PBS stations by William Y. Zou since the basic broadcast chain to the transmitter is the same for UHF and VHF. As Exhibit A shows, the proposed VHF Channel 13 is some $1,455,000 less than a UHF plant for antenna, transmission line and transmitter, plus installation costs.

A complete RF path to the transmitter is shown as a minimal model comparing UHF and VHF plants. All are equal except for the cost of the preceding transmission equipment. I've done this to show the total cost difference to construct the RF plants.

The final category is the need for a new tower, should we have to construct a UHF DTV RF facility. Because of the reduced ERP required, as shown in the MSTV table for Channel 13, we believe the existing tower can be used, with the dislocation of 2-3 current tenants. Even using the minimum amount shown of $670,000, the total expense to be incurred for a UHF Channel 38 RF plant is $2,159,000 vs. $740,000 for a VHF, or three times the amount. I haven't even included the recurring utility costs, but they, too, are substantial. It currently costs an average of $3,000/month to operate our current NTSC transmitter, so simulcasting will cost 100% more, or $6,000/month. Estimated power consumption for a 4kw VHF transmitter will be $420/month or 85% less than a second UHF transmitter. Yearly costs would be $72,000 for UHF/VHF or $41,040 for UHF/VHF simulcasting. Again, these are substantial numbers. These reasons alone should be enough for the Commission to allow stations the time necessary to fully study whether the assigned channel is the best channel.

Included with this statement are the coverage and interference studies done by MSTV for Channel 13 at our transmitting site. Since the Commission has not released Bulletin OET69, it is extremely difficult to do the necessary studies to approve or deny our request. I hope this submission will at least let us reserve the right to petition the Commission at a later date to apply for a channel change, if the study proves Channel 13 acceptable.

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EXHIBIT A

Cost of Transmission Equipment

Channel

Category	Med. Power UHF	High VHF
Transmitter	$560K	$100K
Transmitter Installation	$80K	$20K
Antenna	$150K	$30K
Antenna Installation	$30K	$15K
Transmission Line	$100K	$50K
Transmission Line Install.	$40K	$20K
Bandpass Filter	$30K	$10K
Modulator/Upconverter	$15K	$15K
Total	**$1.005M**	**$260K**

Assumptions:

Category	Med. Power *UHF*	High VHF
ERP	320 KW	20 KW
Line Loss (1000ft)	3 dB	1 dB
Antenna Gain	30	7 to 8
Transmitter (average power)	21 KW	4 KW
Transmitter (peak power)	95 KW	18 KW
Transmitter Type	IOT	Solid State
Transmission Line	6 1/8"	3 1/8"
Transmission Line Type	Rigid	Rigid
HAAT	1000 ft	1000 ft
Coverage	50 Miles	58 Miles

Channel Minimal Model Without STL Multiplexing

Category	Med. Power *UHF*	High VHF
Transmission Equipment	$1.045M	$260K
Broadcast Equipment	$265K	$265K
Digital STL System	$119K	$119K
Monitoring/Testing	$60K	$60K
Total	**$1.489M**	**$704K**

Existing Tower Site, New Additional Tower:

	UHF Channel
Access road	$10K – 150K
Soils and survey	$10K – 20K
Electric (substation and generator)	$50K – 400K
Tower & Installation (1000')	$600K – 1,000K
Total	**$670K – 1.570M**

ASSOCIATION FOR **MAXIMUM SERVICE TELEVISION, INC.**

MSTV

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October 11, 1996

TO: REGIONAL COORDINATION TEAMS

FROM: Victor Tawil

Victor Tawil
Vice President

SUBJECT: Proposed Industry Modified DTV Channel Assignments by Region

Attached is the Broadcasters' Modified Table for your region and adjoining regions. It is the direct result of of the Broadcasters' principles as executed by the computer software. The only additional principles were those approved by the Caucus Technical Committee, outlined below.

Three steps were involved in developing this table. The first was to back-engineer the FCC table to confirm its methodology. The second step was to "correct" certain problems and faulty assumptions in the FCC table so that we would have an "apples-to-apples" comparison between the FCC core channel approach and the Broadcasters' full-band approach.[2] The third step was to plot an optimal table using the entire band. In order to make as few changes to the FCC table as possible, we attempted to reduce our use of channels 2-6 and channels 60-69. Upon the recommendation of the Caucus Technical Committee, three further changes were made: (1) the planning factors for UHF receiver noise figures were reduced from 10 db to 7 db; (2) there was a dipole factor correction; (3) no minimum power was used.

It is important to emphasize that the Modified Table is preliminary and will be changed through the coordination process as stations propose acceptable individual channel changes. The Modified Table and the list of alternative DTV channels for each market will provide the basis for arriving at a Revised Modified Table for submission with the comments.

Attachment
VT/lym

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[2] Examples of the corrections made to the FCC table include the following: (1) The FCC table did not use ACATS planning factors for the VHF channels. As a result, it under-predicted interference to NTSC VHF channels. (2) The FCC table assigned short-spaced adjacent channels without collocating them. This caused increased interference. (3) The FCC table assigned channels 3 and 4 in the same market.

ATV PLAN

10-09-96

Longley-Rice Analysis

REGION 9

SUMMARY OF ANALYSIS PARAMETERS

Longley-Rice Study
Study type: NTSC from NTSC and ATV

Assignment model file used: plan_100996.dat

CHANNELS TO BE CONSIDERED WHEN ANALYZING INTERFERENCE
RELATIONSHIP SHOWN WITH RESPECT TO PROTECTED STATION

RELATIONSHIPS ARE FOR NTSC to NTSC

1. 0 YES	2. +1 YES
3. +2 YES	4. +3 YES
5. +4 YES	6. +5 NO
7. +7 YES	8. +8 YES
9. -1 YES	10. -2 YES
11. -3 YES	12. -4 NO
13. -5 NO	14. -7 YES
15. -8 YES	16. +14 YES
17. +15 YES	

CHANNELS TO BE CONSIDERED WHEN ANALYZING INTERFERENCE
RELATIONSHIP SHOWN WITH RESPECT TO PROTECTED STATION

RELATIONSHIPS ARE FOR ATV to NTSC

1. 0 YES	2. +1 YES

3.	+2 YES	4.	+3 YES
5.	+4 YES	6.	+5 NO
7.	+7 YES	8.	+8 YES
9.	-1 YES	10.	-2 YES
11.	-3 YES	12.	-4 YES
13.	-5 NO	14.	-7 YES
15.	-8 YES	16.	+14 YES
17.	+15 YES		

Protection Ratios in DB to be Applied

NTSC to NTSC

Co-channel: (1) Low VHF: 28.00 (2) High VHF: 28.00 (3) UHF: 28.00

From Upper Adjacent Channel:
(4) Low VHF: -13.00 (5) High VHF: -13.00 (6) UHF: -13.00

From Lower Adjacent Channel:
(7) Low VHF: -3.00 (8) High VHF: -3.00 (9) UHF: -3.00

From UHF on channels removed by:
(10) Plus 2: -29.00 (11) Plus 3: -34.00 (12) Plus 4: -23.00
(13) Plus 5: ****** (14) Plus 7: -33.00 (15) Plus 8: -41.00
(16) Plus 14: -25.00 (17) Plus 15: -9.00

(18) Minus 2: -26.00 (19) Minus 3: -33.00 (20) Minus 4: ******
(21) Minus 5: ****** (22) Minus 7: -30.00 (23) Minus 8: -32.00

Protection Ratios in DB to be Applied

ATV to NTSC

Co-channel: (1) Low VHF: 34.44 (2) High VHF: 34.44 (3) UHF: 34.44

From Upper Adjacent Channel:
(4) Low VHF: -11.95 (5) High VHF: -11.95 (6) UHF: -11.95

From Lower Adjacent Channel:
(7) Low VHF: -17.43 (8) High VHF: -17.43 (9) UHF: -17.43

From UHF on channels removed by:
(10) Plus 2: -27.93 (11) Plus 3: -34.13 (12) Plus 4: -24.96
(13) Plus 5: ****** (14) Plus 7: -43.22 (15) Plus 8: -43.22
(16) Plus 14: -33.38 (17) Plus 15: -30.58

(18) Minus 2: -23.73 (19) Minus 3: -29.73 (20) Minus 4: -33.80
(21) Minus 5: ****** (22) Minus 7: -34.80 (23) Minus 8: -31.62

ATV power based on service equivalent to paried NTSC station

Receive antenna pattern considered for NTSC (applied to
all channel relationships)

Transmit antenna pattern used for NTSC stations

Transmit antenna pattern used for ATV stations

Transmit antenna horizontal pattern considered
when computing radiation from NTSC stations

Transmit antenna horizontal pattern considered
when computing radiation from ATV stations

Service contours used

Low VHF	47.00 dBu NTSC	27.81 dBu ATV
High VHF	56.00 dBu NTSC	35.81 dBu ATV
UHF	64.00 dBu NTSC	40.81 dBu ATV

SUMMARY OF ANALYSIS PARAMETERS

Longley-Rice Study
Study type: ATV from NTSC and ATV

Assignment model file used: plan_100996.dat

CHANNELS TO BE CONSIDERED WHEN ANALYZING INTERFERENCE
RELATIONSHIP SHOWN WITH RESPECT TO PROTECTED STATION

RELATIONSHIPS ARE FOR ATV to ATV

1. 0 YES	2. +1 YES
3. +2 YES	4. +3 YES
5. +4 YES	6. +5 NO
7. +7 YES	8. +8 YES
9. -1 YES	10. -2 YES
11. -3 YES	12. -4 YES
13. -5 NO	14. -7 YES
15. -8 YES	16. +14 YES
17. +15 YES	

CHANNELS TO BE CONSIDERED WHEN ANALYZING INTERFERENCE
RELATIONSHIP SHOWN WITH RESPECT TO PROTECTED STATION

RELATIONSHIPS ARE FOR NTSC to ATV

1. 0 YES	2. +1 YES

3.	+2 YES	4.	+3 YES
5.	+4 YES	6.	+5 NO
7.	+7 YES	8.	+8 YES
9.	-1 YES	10.	-2 YES
11.	-3 YES	12.	-4 YES
13.	-5 NO	14.	-7 YES
15.	-8 YES	16.	+14 YES
17.	+15 YES		

Protection Ratios in DB to be Applied

ATV to ATV

Co-channel: (1) Low VHF: 15.27 (2) High VHF: 15.27 (3) UHF: 15.27

From Upper Adjacent Channel:
(4) Low VHF: -43.17 (5) High VHF: -43.17 (6) UHF: -43.17

From Lower Adjacent Channel:
(7) Low VHF: -41.98 (8) High VHF: -41.98 (9) UHF: -41.98

From UHF on channels removed by:
(10) Plus 2: -59.13 (11) Plus 3: -61.53 (12) Plus 4: -55.40
(13) Plus 5: ****** (14) Plus 7: -63.00 (15) Plus 8: -62.40
(16) Plus 14: -63.00 (17) Plus 15: -62.90

(18) Minus 2: -60.52 (19) Minus 3: -60.61 (20) Minus 4: -60.61
(21) Minus 5: ****** (22) Minus 7: -63.00 (23) Minus 8: -62.80

Protection Ratios in DB to be Applied

NTSC to ATV

Co-channel: (1) Low VHF: 1.81 (2) High VHF: 1.81 (3) UHF: 1.81

From Upper Adjacent Channel:
(4) Low VHF: -48.71 (5) High VHF: -48.71 (6) UHF: -48.71

From Lower Adjacent Channel:
(7) Low VHF: -47.73 (8) High VHF: -47.73 (9) UHF: -47.73

From UHF on channels removed by:
(10) Plus 2: -59.86 (11) Plus 3: -62.49 (12) Plus 4: -58.00
(13) Plus 5: ****** (14) Plus 7: -58.00 (15) Plus 8: -58.00
(16) Plus 14: -58.00 (17) Plus 15: -58.00

(18) Minus 2: -62.45 (19) Minus 3: -61.79 (20) Minus 4: -58.00
(21) Minus 5: ****** (22) Minus 7: -58.00 (23) Minus 8: -58.00

ATV power based on service equivalent to paried NTSC station

Receive antenna pattern considered for ATV (applied to
all channel relationships)

Transmit antenna pattern used for ATV stations

Transmit antenna pattern used for NTSC stations

Transmit antenna horizontal pattern considered
when computing radiation from ATV stations

Transmit antenna horizontal pattern considered
when computing radiation from NTSC stations

ATV service computed using F50-90 curves

ATV service area computed to be equivalent to paired NTSC station

Service contours used

Low VHF	47.00 dBu NTSC	27.81 dBu ATV
High VHF	56.00 dBu NTSC	35.81 dBu ATV
UHF	64.00 dBu NTSC	40.81 dBu ATV

CALL CITY - STATE	NTSC CH.	ATV CH.	ATV POWER (KW)	HAAT METERS	ATV SERVICE AREA (SQ KM)	ATV POPULATION (THOUSANDS)	NTSC SERVICE AREA (SQ KM)	NTSC POPULATION (THOUSANDS)	NTSC NEW IX % NL AREA	NTSC POPULATION AFFECTED %	PERCENT MATCHING
WNED BUFFALO NY	17	33	120.6	327.9	21535	1406	21138	1386	0.3	0.7	100.0
WNEQ BUFFALO NY	23	15	17.7	313.9	16277	1332	16225	1324	0.6	0.3	99.7
WUTV BUFFALO NY	29	14	19.6	284.6	15757	1321	15694	1316	4.1	2.0	99.8
WNYB BUFFALO NY	49	43	153.4	374.9	16644	1432	17001	1450	2.0	1.0	96.1
WWNY CARTHAGE NY	7	25	1087.0	226.2	24071	276	22915	262	0.0	0.0	100.0
NEW CORNING NY	30	0	0.0	239.3	0	0	10392	330	0.8	0.2	100.0
WYDC CORNING NY	48	26	0.1	163.9	1840	88	1817	70	0.0	0.0	98.3
WETM ELMIRA NY	18	63	5.8	375.7	9219	286	9750	284	0.4	1.4	97.2
WENY ELMIRA NY	36	50	9.8	323.7	10880	346	10453	298	0.3	0.1	99.3
WLIW GARDEN CITY NY	21	57	166.6	123.8	10415	12217	8986	11167	0.8	0.3	99.8
NEW ITHACA NY	52	0	0.0	187.4	0	0	5306	194	0.0	0.0	99.8
WTJA JAMESTOWN NY	26	9	0.3	179.8	7670	214	6479	161	9.2	2.5	99.8
WRNN KINGSTON NY	62	67	195.1	593.9	18361	1823	16026	1333	0.4	2.4	99.5
WCBS NEW YORK NY	2	28	198.8	482.6	27941	18038	23806	16940	0.0	0.0	98.1
WNBC NEW YORK NY	4	36	178.7	513.6	29431	18302	25319	17203	0.0	0.0	97.9
WNYW NEW YORK NY	5	33	168.0	513.6	29396	18278	25222	17115	0.1	0.1	98.9
WABC NEW YORK NY	7	27	107.0	490.6	26771	17947	23949	17103	0.0	0.0	99.4
WPIX NEW YORK NY	11	56	166.5	506.6	26168	17845	23169	17021	1.1	0.3	99.3
WNYE NEW YORK NY	25	24	78.1	394.6	18742	16732	18368	16630	5.9	1.4	99.1
WNYC NEW YORK NY	31	34	109.5	474.6	18034	16553	17940	16391	1.0	0.4	98.4
WPTZ NORTH POLE NY	5	38	312.6	616.7	29076	407	30153	431	0.0	0.0	91.6
WNPI NORWOOD NY	18	15	10.9	243.7	12803	148	12472	140	0.0	0.0	99.9
WCFE PLATTSBURGH NY	57	13	0.3	741.3	14705	262	14325	257	0.0	0.0	99.9
WTBY POUGHKEEPSIE NY	54	69	248.6	491.5	17302	2708	15171	1704	1.4	0.7	99.6
WLIG RIVERHEAD NY	55	17	59.6	194.0	10100	3073	10215	3315	2.9	11.3	97.9
WROC ROCHESTER NY	8	28	1330.8	153.2	21012	1189	17825	1097	0.0	0.0	100.0
WHEC ROCHESTER NY	10	32	1449.1	153.2	20643	1175	18679	1096	0.0	0.0	99.7
WOKR ROCHESTER NY	13	58	2350.2	152.2	20647	1178	19764	1131	0.0	0.0	99.8
WXXI ROCHESTER NY	21	65	55.8	151.2	9872	1016	9885	1011	0.0	0.0	100.0
WUHF ROCHESTER NY	31	59	37.0	150.2	10989	995	11192	1002	1.4	1.0	97.8
NEW ROCHESTER NY	61	0	0.0	129.2	0	0	10408	987	0.8	0.3	97.8
NEW SARANAC LAKE NY	61	0	0.0	440.7	0	0	8959	31	0.0	0.0	97.8
WRGB SCHENECTADY NY	6	26	1348.2	317.8	27429	1485	27154	1421	0.1	0.0	96.4
WMHT SCHENECTADY NY	17	21	99.6	295.9	17925	1241	16915	1142	1.7	1.2	99.5
WMHQ SCHENECTADY NY	45	43	84.0	332.9	14564	1107	13931	1045	1.6	0.8	100.0
WHSI SMITHTOWN NY	67	10	0.6	218.0	11023	3234	10891	3087	0.8	1.2	99.1

NL means Noise Limited

ATV PLAN

10-09-96

Other Available Channel List

REGION 9

Station at: NY CORNING
6 23 25 27 33 39 41 60 66 69
Existing channel 48 ATV channel 26

Station at: NY ELMIRA
4 6 23 42 60 66 69
Existing channel 18 ATV channel 63

Station at: NY ELMIRA
4 6 23 42 60 66 69
Existing channel 36 ATV channel 50

Station at: NY GARDEN CITY
60
Existing channel 21 ATV channel 57

Station at: NY ITHACA
60 66
Existing channel 52 ATV channel 0

Station at: NY JAMESTOWN
5 6 8 10 19 21 22 27 28 39 40 41 50 56 57 58 59 64 69
Existing channel 26 ATV channel 9

Station at: NY KINGSTON
Existing channel 62 ATV channel 67

Station at: NY NEW YORK
Existing channel 2 ATV channel 28

Station at: NY NEW YORK
Existing channel 4 ATV channel 36

Station at: NY NEW YORK
Existing channel 5 ATV channel 33

Station at: NY NEW YORK
Existing channel 7 ATV channel 27

Station at: NY NEW YORK
Existing channel 11 ATV channel 56

Station at: NY NEW YORK
Existing channel 25 ATV channel 24

Station at: NY NEW YORK
Existing channel 31 ATV channel 34

Station at: NY NORTH POLE
36 43 50 53 64 66
Existing channel 5 ATV channel 38

Station at: NY NORWOOD
3 33 34 54 55 66
Existing channel 18 ATV channel 15

Station at: NY PLATTSBURGH
19 34 36 50 58 66
Existing channel 57 ATV channel 13

ALTERNATE

PROPOSED

ASSOCIATION FOR MAXIMUM SERVICE TELEVISION, INC.

MSTV

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Victor Tawil
Vice President

November 18, 1996

Charles Zarbo
Chief Engineer
WCFE-TV/Mountain Lake Public Bcstg.
One Sesame Street
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Region 09-026

Dear Mr. Zarbo:

Attached are the maps you requested. These maps represent visual representations of the coverage and interference and replication statistics tabulated in the modified Broadcaster Caucus table. Please note that the NTSC station parameters used to plot these maps are the same as the ones used by the FCC and **do not** reflect any corrections that may have been submitted to correct the FCC database during the past week or so. Once these corrections are verified, they will be incorporated in our database.

The attached maps incorporate a dipole factor correction at UHF. The dipole factor correction -- proposed in the modified table, is reflected in the calculation of the predicted contour for both NTSC and DTV. For your information, I am enclosing a description of the Broadcasters Caucus model (see page 4) on how the dipole factor was applied.

Should you have any questions, please do not hesitate to get with your Technical Regional Coordinator(s) or, if unavailable, contact me at 202-861-0344.

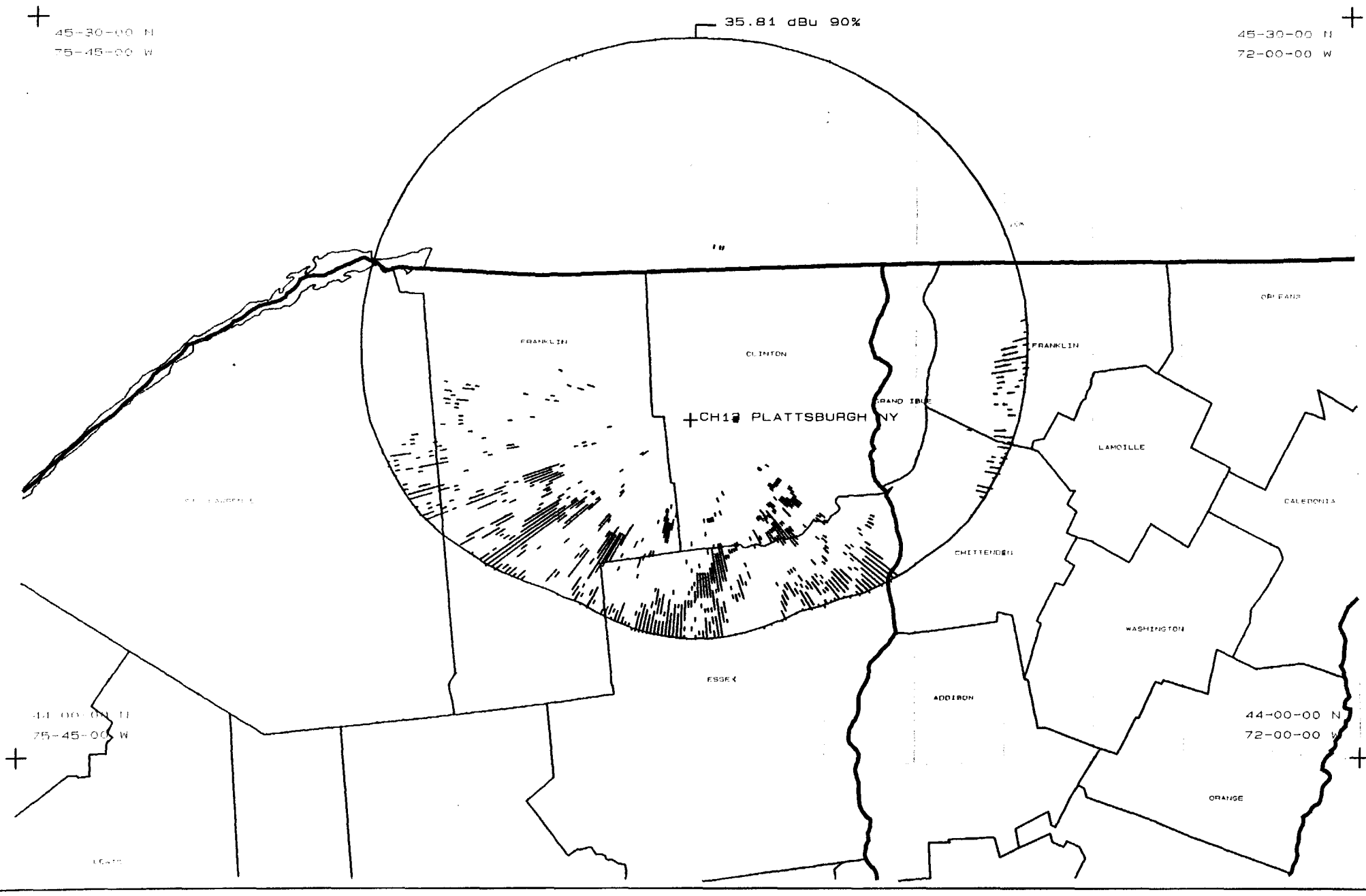
Sincerely,

Victor

Victor Tawil

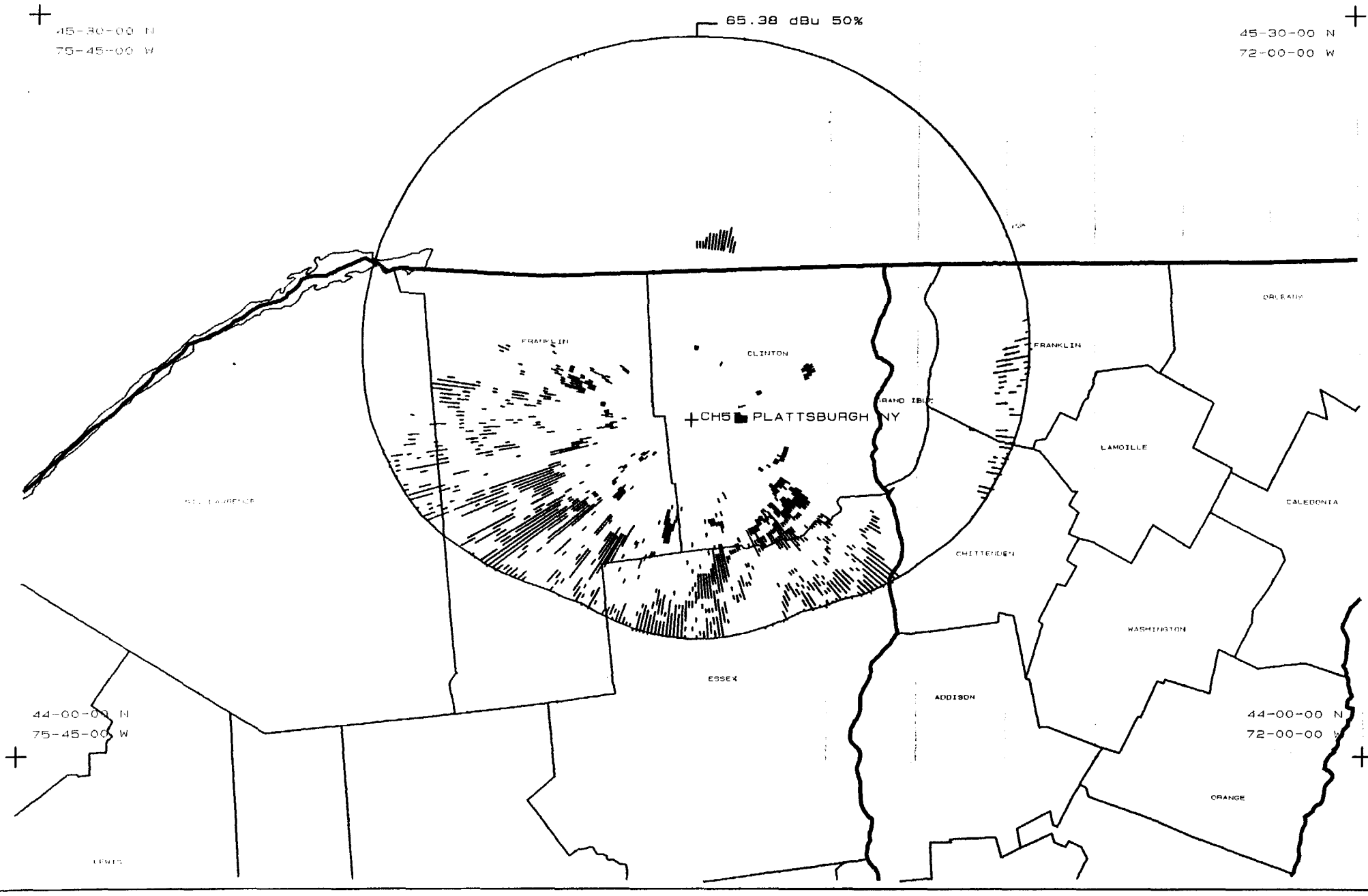
Attachment
cc: Bob Niles, John Demshock
VT/lym

1956 40 YEARS 1996



Terrain loss - Red, IX NTSC - Blue, ATV - Green
WCFE-ATV Ch. 13 ERP 0.3 HAAT 741.0
PLATTSBURGH NY Dir. Ant. BOG ODD881102KE
Date: 10 16 96 Scale points 44.70/ 73.88/103.77

MAJOR DIVISIONS ARE: 10.0 KM
SCALE IS: 29.55 KM/INCH
18.36 MILES/INCH



Terrain loss - Red, IX NTSC - Green, ATV - Blue
WCFE-NTSC Ch. 57 ERP 794.0 HAAT 741.0
PLATTSBURGH NY Dir. Ant. BOG ODD881102KE
Date: 10 16 96 Scale points 44.70/ 73.88/103.77

MAJOR DIVISIONS ARE: 10.0 KM
SCALE IS: 29.55 KM/INCH
18.36 MILES/INCH

VERSION 1.0 -TAB 4
SEPTEMBER 30, 1996

DESCRIPTION OF THE BROADCASTERS' DTV CHANNEL ASSIGNMENT MODEL

The following describes how the Broadcasters' computer model is crafted to produce a table of ATV assignments that will maximize achievement of the following goals:

(a) provide an ATV channel for each current NTSC station;
(b) replicate each NTSC station's service area with the new ATV channel;
(c) minimize the interference to existing NTSC service.

Since DTV will be operating in the same spectrum bands as the NTSC service, DTV stations must be "squeezed in" among the same number of existing NTSC stations without causing unacceptable interference to existing stations or the new DTV channels. This assignment problem is so large as to be nearly infinite so that a successful solution to such a problem requires the use of a carefully structured approach.

The model comprises two principal software programs. The first program, referred herein as the **Assignment Model,** assigns DTV channels for each geographic area based on minimum geographical separation distances. The second program, referred herein as the **Coverage and Interference Model,** refines this selection to optimize the assignments to maximize coverage and minimize interference.[1] The coverage and interference program has the option of using either the FCC R-6602 Curves or the Longley-Rice terrain-dependent model, for computing coverage and interference. The **Coverage and Interference Model** can change the original channel assignments, and can evaluate using additional channels where terrain blocking may permit stations to operate at closer spacing.

The model assumes exact (same tower) co-location of the new DTV transmitter with its paired NTSC transmitter, and also assumes the same antenna height and coverage pattern for DTV and NTSC paired channels.

I. Model Description

a) Creation of Initial Table and the Pool of DTV Available Channels

The first step in the development of a table is to generate an initial table that pairs existing NTSC stations with specific DTV assignments. The initial paired Table is created using the **Assignment Model** which uses minimum separation distances to determine the number of existing stations that

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[1] For a more detailed description of the model, refer to a paper entitled:" Spectrum Studies for Advanced Television Service in the U.S." By Bill Meintel, 1994 Proceeding of the NAB Broadcast Engineering Conference

can be accommodated with an additional DTV channel under different co-channel, and/or adjacent channels or taboos' distances specified by the user. This is accomplished by first ranking the existing NTSC stations for a given area in order of difficulty of finding a channel for them, and then using a mathematical optimization method to find the largest number of stations that can be accommodated within that area. Some of the criteria used by the model to develop the initial table are:

Congested Markets First: In the less congested markets, there will be a larger number of eligible DTV channels than there are NTSC stations. In the more congested markets and their outlying area, there may be the same number of eligible DTV channels as there are NTSC stations. Given these relative constraints, it became apparent from the outset that the **Assignment Model** would assign channels first in those core markets where channel congestion is the worst and then moving out to the less congested markets where there are fewer constraints.

Thus, for example, since there are available only the same number of DTV channels for the New York City market as there are NTSC stations in that market, it made sense for the model to start with the assumption that those channels would be used in New York City, rather than in the adjacent markets of Scranton, Bridgeport or Utica.

VHF and UHF: The model selects eligible channels for each station without regard to whether a VHF or UHF channel is being considered.

In addition to generating an initial paired table, the **Assignment Model** generates a list of available channels for each station that was assigned an DTV channel. This list of available channels is used by the **Coverage and Interference Model** to improve upon the initial paired table by substituting channels where appropriate to minimize NTSC interference and maximize coverage for DTV stations.

b) Analysis and Modification of Initial Table

The above-described process yields a list of DTV channels that are eligible for use in each station in the market. This list provides the starting point for the evaluation of the actual coverage and interference of all the channels that are available on that list, including the channels that were assigned in the initial table. Specifically, the **Coverage and Interference Model** "tries out" each of the eligible DTV channels for all the stations in a market by calculating the overall effect of each option, using either the FCC R-6602 Curve or the Longley-Rice terrain-dependent propagation model, the planning factors specified in Appendix A and the Grand Alliance system performance parameters specified in Appendix B. Because of the "daisy chain" effect, each option can have different coverage and interference ramifications on the same and adjacent markets. The model picks the "best" DTV channel for each NTSC station in the market, as determined by the priorities listed below, and the parameters and rules that follow, thereby maximizing DTV service and minimizing interference to NTSC viewers.

Priorities

(a) Replication: The **Coverage and Interference Model** selects DTV channel assignments that provide the highest replication percentage of the paired NTSC channel's coverage. Specifically, the model evaluates the initial assignment in the initial paired table to determine whether full replication is achieved. If full replication is not achieved, the model tries to substitute channels from the list of available DTV channels that best replicate (match) the existing service area of the associated NTSC station. Prior to the evaluation, however, the list of available channels is ranked from lowest to the highest and is modified to eliminate any DTV channels that do not meet minimum channel spacing requirements. This arrangement avoids adjacent-channel interference in the same market. It is also helpful in achieving comparable service areas between the paired NTSC and DTV stations.

(b) Replication for Co-located NTSC Stations: For the situations where two or more NTSC stations are operating from the same tower and/or nearby sites (distance is specified by the user and generally set equal to zero), the model seeks to evaluate all of the DTV assignments on the same tower and/or nearby sites by attempting to optimize the replication for the entire group of stations rather than each station individually. This model, however, before applying this priority automatically assigns the adjacent channel to existing licensees (i.e., exact co-location), regardless of replication.

Optional Priority Setting

Maximization of Coverage: As a result of applying the replication principle, stations operating at less than maximum NTSC facilities are initially matched with DTV channels and facilities that will produce service areas that, accordingly, may be smaller than a maximum-facility NTSC station. This option allows stations with less than maximum facility to expand their DTV coverage by increasing power to the extent of the largest calculated DTV service areas in the same area in the same market, provided that such an expansion would not cause any new interference to existing NTSC or other DTV stations.

II. Basic Parameters

NTSC Stations Database. The model uses a snapshot of the FCC database that includes the current NTSC licensees, approved construction permits and pending applications. The NTSC service area of each licensee is predicted using the information in the FCC engineering databases. The main database includes the location, power and heights of each transmission facility and a link to the FCC's antenna pattern database. DTV selection alternatives are constrained to existing television towers.

Antenna Pattern. The model uses the directional antenna patterns of stations as specified in the FCC engineering antenna pattern database. When no antenna pattern is in the FCC's database, a standard omni-directional antenna pattern is used. The vertical pattern of the antenna is included in Appendix C.

Planning Factors. The planning factors and technical parameters developed by ACATS PS/WP3 are used by this model (See Appendix A). In addition, the model has an added option of using an antenna dipole adjustment factor to adjust required UHF power levels from the nominal center-of-UHF-band dipole factor that is used for the FCC propagation curves. This adjustment is described in more detail below under Dipole Factor Adjustment.

Dipole Factor Adjustment. The field strength required to deliver a given voltage at the receiver terminals is adjusted as a function of the UHF operating channel. The NTSC Grade B contour is determined using a constant dipole factor which is based upon median frequency for each of the low VHF, high VHF and UHF bands.

The reference predicted-contour for each NTSC station is adjusted using a factor for each UHF channel. The total adjustment range across the UHF band is 4.6 dB. Each channel's field strength is adjusted to equalize the delivered signal. This adjusted level is then the effective Grade B threshold level. Since the nominal Grade B value is based upon the center of the UHF band, this results in a 2.3 dB reduction for channel 14 and 2.3 dB increase for channel 69. The channels that are closer to the middle have smaller adjustments. There is no corresponding adjustment made for VHF frequencies due to the small practical impact on transmitter size required for operation at those frequencies.

NTSC Baseline. "NTSC Baseline" is defined as the area with the predicted service within the predicted Grade B Contour based on FCC F(50,50) propagation curves. The service area can be calculated using either the FCC Curves or the Longley-Rice Model. The Longley-Rice propagation prediction methodology, however, yields several improvements over the FCC model in that:

- It calculates the existing NTSC service (and prospective DTV service) by taking into account the effect of terrain and predicted interference.
- The Longley-Rice methodology also incorporates various factors that more accurately reflect propagation differences between low UHF and high UHF channels. The methodology adjusts for these differences when calculating the coverage and interference of both NTSC and DTV.

NTSC Service Area. "NTSC service area" is defined as the area within the predicted Grade B contour based on the FCC F(50,50) propagation curves as:

(a) reduced by areas where interference is caused by other NTSC stations;

(b) reduced by areas where interference caused by DTV stations exceeds acceptable levels as determined by laboratory test of the Grand Alliance prototype hardware at ATTC; and

(c) reduced by areas that do not receive NTSC service due to terrain as predicted by the Longley-Rice methodology.